

REMARKS

Claims 1, 4-7, 10, 11, 14-16, 19, and 20 are pending and rejected.

On page 4 of the Office Action, claims 1, 4-7, 10, 11, 14-16, 19, and 20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kakuchi et al. (JP 2003-252904) (“Kakuchi”) in view of Dederen et al. (U.S. Patent Application Publication 2002/00065328) (“Dederen”). (To be fully responsive, claims 1-20 were rejected, but claims 2, 3, 8, 9, 12, 13, 17, and 18 are cancelled.)

On page 7 of the Office Action, claims 1, 4-7, 10, 11, 14-16, 19, and 20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kakuchi in view of Wang et al. (U.S. Patent No. 6,197,319) (“Wang”). (To be fully responsive, claims 1-20 were rejected, but claims 2, 3, 8, 9, 12, 13, 17, and 18 are cancelled.)

In response, Applicants respectfully submit that the presently claimed invention is not rendered obvious by the cited references for at least the following reasons.

There is no teaching, suggestion, motivation, or other reason to combine Kakuchi in view of Dederen or Kakuchi in view of Wang. Specifically, Applicants respectfully assert the following:

First, it was common to use a linear polysaccharide in an external preparation. (Applicants assert that, to their knowledge, one hundred percent of the conventional prescriptions for an external preparation have employed a linear polysaccharide.)

Second, a multi-branched polysaccharide *per se* has not been generally used as a polymer.

Third, the useful properties of a multi-branched polysaccharide for use in an external preparation have not been known to the public.

Moreover, Applicants respectfully submit that a person of ordinary skill in the art would not have been motivated to add the multi-branched polysaccharides of Kakuchi to Dederen or Wang.

As evidence, Applicants submit “Synthesis, Branched Structure, and Solution Property of Hyperbranched D-Glucan and D-Galactan”, *Macromolecules* 2005, 38, 4202-4210 by Satoh et al (“Satoh”).

Satoh shows linear polysaccharides, comparable to multi-branched polysaccharides in molecular weight, having a viscosity which is one digit larger than that of the multi-branched polysaccharides. See page 4209, left column, last full paragraph of Satoh. Applicants respectfully assert that linear polysaccharides have a larger viscosity because one chain extends in a solution and is likely to entangle with an adjacent chain. On the other hand, since multi-branched polysaccharides have a shorter chain, they are less likely to be entangled with an adjacent chain and a solvent, which results in a smaller viscosity.

Further, it is difficult to substitute the multi-branched polysaccharides of Kakuchi in place of the linear polysaccharides of Dederen or Wang, because linear polysaccharides have a one digit larger viscosity that is completely different from multi-branched polysaccharides in a solution state. At page 4209 of Satoh, in the section entitled “Viscosity of Solution” in the left column, Satoh teaches that 35 U.S.C. §

“Although the hyperbranched polysaccharides have high molecular weights, their viscosity were very low, as compared to the viscosity for the linear polysaccharides; the intrinsic viscosities . . . of **poly-1** and **poly-2** were in the range from 0.023 to 0.042 dL·g⁻¹ . . . while

the [intrinsic viscosity] value for the linear polysaccharide of (1→6)- α -D-glucopyranan was 0.37 dL·g⁻¹...”

Due to this difference in viscosity, multi-branched polysaccharides exhibit the properties of a Newtonian fluid. Since general linear polymers, including linear polysaccharides are non-Newtonian fluids, the multi-branched polysaccharide, which is a Newtonian fluid, would usually not be substituted for a linear polysaccharide. Also, a person of ordinary skill in the art would not have expected employing multi-branched polysaccharides for use in an external preparation for skin to enable a smoother feeling.

In view of the above, Applicants respectfully submit that there is no teaching, suggestion, motivation or other reason to combine Kakuchi in view of Dederen or Wang. Therefore, Applicants respectfully submit that claims 1, 4-7, 10, 11, 14-16, 19 and 20 are not rendered obvious by any combination of these references.

Reconsideration and withdrawal of the obviousness rejection are respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Bruce E. Kramer
Registration No. 33,725

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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